

CLAIMS

We claim as our invention:

1. A method for producing tools or blanks for tools of reduced dimensions for use in the assembly and interconnection of semiconductor chips, comprising the steps of:
 - a. providing at least one sinterable material in fine particulate form and at least one degradable organic thermoplastic material,
 - b. mixing an accurately determined volume of said sinterable particulate material or materials with an accurately determined volume of said thermoplastic material or materials to form a thermoplastic compound,
 - c. forming said thermoplastic compound into green semiconductor wire bonding tools or blanks,
 - d. extracting substantially all of the organic thermoplastic material from said green tools or blanks and sintering the thus obtained organic-free preforms.
2. The method of Claim 1 whereby the reduced dimensions may include boreholes having diameters below 10 micrometers.
3. The method of Claim 2 whereby the said sinterable particulate material or materials are selected from the class of metals and their alloys, ceramics and their alloys and mixtures of metals and ceramics or their alloys.

4. The method of Claim 3 whereby the said sinterable material or materials include micron-sized or nanometer-sized particulates.

5. The method of Claim 4 whereby the said degradable organic thermoplastic ingredient or ingredients are selected from the class of polyolefins, waxes, plasticizers, greases, oils, surfactants and mixtures of these.

6. The method of Claim 5 whereby the tools semiconductor wire bonding tools include capillaries and bonding wedges or blanks for these.

7. The method of Claim 5 whereby the tools to fabricate micromolds for semiconductor wire bonding tools or blanks and the products made therewith.

8. A method to fabricate microwire drawing dies and the microwires produced therewith.

9. A method for increased integration of electronic circuits on semiconductor microchips by allowing the use of bonding wire of less than 20 micrometers in diameter and bond pads of less than 15 micrometer by 15 micrometer and placed at a distance of less than 15 micrometer from each other and the products made therewith.

10028285-021602